CLAIMS

1. In a method for cutting at least one graphics area from a sheet of material bearing a combination of such graphics area(s) and a plurality of registration marks in predetermined positions with respect to the graphics area(s), such combination being in a predetermined approximate position and orientation with respect to a set of reference features of the sheet, the method including (a) placing the sheet on a sheet-receiving surface, (b) sensing the precise positions of the marks with a main sensor, and (c) cutting the graphics area(s) from the sheet in response to such precise positions, the improvement comprising:

- automatically determining whether the reference features are in an expected coordinate region on the sheet-receiving surface;
- if the reference features of the sheet are not in the expected coordinate region, automatically determining the coordinate region of the reference features on the sheet-receiving surface;
- sensing the metrics of the reference features to determine the position and orientation of the sheet; and
- inferring therefrom the approximate positions of the registration marks.

2. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes:

- enlarging the field of view of the main sensor;
- locating the reference features within the enlarged field of view; and
- shrinking the field of view of the main sensor such that the reference features are within the field of view of the main sensor.

3. The method of claim 2 wherein enlarging and shrinking the field of view of the main sensor includes zooming a lens of the main sensor.

4. The method of claim 2 wherein:

- the enlarging step includes increasing the distance between the main sensor and the sheet of material; and
- the shrinking step includes decreasing the distance between the main sensor and the sheet of material.

5. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes locating the reference features within the field of view of a secondary sensor.

6. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes sensing an edge of the sheet.

7. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes sensing an adjacent pair of edges of the sheet.

8. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes sensing a predefined graphics feature of the sheet.

9. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes sensing two predefined graphics features of the sheet.

10. The method of claim 1 wherein automatically determining the coordinate region of the reference features includes:

- moving the main sensor in a predetermined pattern surrounding the expected coordinate region of the reference features; and
- stopping the movement of the main sensor when the reference features are within the field of view of the main sensor.

11. The method of claim 10 wherein the moving step includes rotating the main sensor such that the field of view changes.

12. In a method for cutting at least one graphics area from a sheet of material bearing a combination of such graphics area(s) and a plurality of registration marks in predetermined positions with respect to the graphics area(s), such combination being in a predetermined approximate position and orientation with respect to a set of reference features of the sheet, the method including (a) placing the sheet on a sheet-receiving surface, (b) sensing the precise positions of the marks with a main sensor, and (c) cutting the graphics area(s) from the sheet in response to such precise positions, the improvement comprising:

- automatically determining whether the reference features are in an expected coordinate region on the sheet-receiving surface;
- if the reference features of the sheet are not in the expected coordinate region, automatically determining the coordinate region of the reference features on the sheet-receiving surface;
- sensing the metrics of the reference features to determine the position and orientation of the sheet; and
- inferring therefrom the approximate positions of the registration marks,

whereby cutting occurs precisely despite two-dimensional distortion of the sheet prior to cutting.

13. In a method for narrow-path-processing with respect to at least one graphics area on a sheet of material bearing a combination of such graphics area(s) and a plurality of registration marks in predetermined positions with respect to the graphics area(s), such combination being in a predetermined approximate position and orientation with respect to a set of reference features of the sheet, the method including (a) placing the sheet on a sheet-receiving surface, (b) sensing the precise positions of the marks with a main sensor, and (c) narrow-path-processing with respect to the graphics area(s) in response to such precise positions, the improvement comprising:

- automatically determining whether the reference features are in an expected coordinate region on the sheet-receiving surface;
- if the reference features of the sheet are not in the expected coordinate region, automatically determining the coordinate region of the reference features on the sheet-receiving surface;
- sensing the metrics of the reference features to determine the position and orientation of the sheet; and
- inferring therefrom the approximate positions of the registration marks.

14. In apparatus for cutting at least one graphics area from a sheet of material bearing a combination of such graphics area(s) and a plurality of registration marks in predetermined positions with respect to the graphics area(s), such combination being in a predetermined approximate position and orientation with respect to a set of reference features of the sheet, such apparatus including (a) a sheet-receiving surface, (b) a main sensor, (c) a cutter operatively connected to the sensor and movable about the sheet-receiving surface for cutting the graphics area(s) from the sheet of material in response to the precise positions of the marks sensed by the main sensor, the improvement comprising: a reference feature identifier which, if the reference features are not in an expected coordinate region on the sheet-receiving surface, automatically determines the coordinate region of the reference features, and which, when the coordinate region of the reference features is known, senses the metrics of the reference features in order to infer the approximate positions of the registration marks.

15. The apparatus of claim 14 wherein the reference feature identifier includes:

- a zoom lens on the main sensor; and
- a controller with a set of locating instructions for (a) enlarging the field of view of the main sensor by zooming the lens, (b) locating the reference features within the enlarged field of view, (c) repositioning the main sensor in response to the locating step, and (d) shrinking the field of view of the main sensor by zooming the lens such that the reference features are within the field of view of the main sensor.

16. The apparatus of claim 14 wherein the reference feature identifier includes:

- a main-sensor height adjustor; and
- a controller with a set of locating instructions for (a) enlarging the field of view of the main sensor by increasing the distance of the main sensor from the sheet material, (b) locating the reference features within the enlarged field of view, (c) repositioning the main sensor in response to the locating step, and (d) shrinking the field of view of the main sensor by decreasing the distance of the main sensor from the sheet such that the reference features are within the field of view of the main sensor.

17. The apparatus of claim 14 wherein the coordinate region identifier includes:

- a secondary sensor with a field of view larger than the field of view of the main sensor; and
- a controller with a set of locating instructions for (a) locating the reference features within the field of view of the secondary sensor, and (b) repositioning the main sensor in response to the locating step such that the reference features are within the field of view of the main sensor.

18. The apparatus of claim 14 wherein the reference feature identifier includes a controller with a set of locating instructions for (a) moving the main sensor in a predetermined pattern surrounding the expected coordinate region of the reference features, and (b) stopping the movement of the main sensor when the reference features are located within the field of view of the main sensor.